METHOD AND APPARATUS FOR PROVIDING A DUAL CURRENT-PERPENDICULAR-TO-PLANE (CPP) GMR SENSOR WITH IMPROVED TOP PINNING

ABSTRACT

A method and apparatus for providing a dual current-perpendicular-to-plane (CPP) GMR sensor with improved top pinning is disclosed. In the passive regions of the sensor, a tri-level biasing layer is formed proximate to the top self-pinned layer. The tri-level biasing layer includes a first metal oxide layer, a layer of alpha-Fe_2O_3 and a second metal oxide layer. The pinning of the top self-pinned layer is enhanced by the layer of alpha-Fe_2O_3. The layer of alpha-Fe_2O_3 pins the top portion of the pinned layer by providing higher coercivity (H_C) to the pinned layer.